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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,860	12/31/2001	Ernest T. Tsui	10559-561001/ P12581	6375
20985	7590	03/10/2005	EXAMINER	
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081			FILE, ERIN M	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/038,860

Applicant(s)

ERNEST T. TSUI

Examiner

Erin M. File

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7, 9-13, 15, 16 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 4, 8, 14 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawing are informal and hand drawn. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: in figure 2 the reference numbers are missing. Reference numbers such as what are used in figure 4 should be included in the corrected drawing. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be

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notified and informed of any required corrective action in the next Office action.

The objection to the drawings will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because of the use of the acronyms IQ in the first line, and OFDM in the second line. Explicit description of the terms, such as, In-Phase/Quadrature (IQ) and Orthogonal Frequency Division Multiplexing (OFDM), should be included. Correction is required. See MPEP § 608.01(b).

4. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are:
The recitation in paragraph seven, "FIG. 2 showsan equalizer" should be changed to *FIG. 2 shows an equalizer*.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 22(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 2, 9, 10, 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Wiss.

Claim 1, 9, 18, Wiss discloses a model for estimating the effect of gain and phase imbalance for in-phase and quadrature components in a received signal ([0027]). The difference between the received signals, I and Q, and the imbalanced signals, I_{imb} and Q_{imb} , is the constellation error in the received signal. Wiss further discloses an equalizer transformation which uses parameters C_0 , C_1 (fig. 5, 14, 16) are used to rebalance the in-phase and quadrature components of the signal ([0060]). Wiss discloses that the received signal may be an orthogonal frequency division multiplexing (OFDM) signal ([0063], line 13).

Claim 2, inherits the limitation of Claim 1, Wiss further discloses applying transformation described in Equation 2 from which parameters C_1 , C_2 are derived

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and used to rebalance the in-phase and quadrature components of the signal (fig. 5, 14, 16, [0028, 0029]).

Claim 10, inherits the limitation of Claim 9, Wiss further discloses his invention uses a new technique that involves adaptive filtering ([0034]) which includes multipliers (fig. 5, 28, 38) which multiply the signals by convergence parameters μ_α , μ_ϕ , which are used to control the convergence parameters of the filter coefficients C_0 , C_1 ([0060]).

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 3, 5-7, 11-13, 15, 16, 19, and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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Claim 3, recites the limitation, “estimating an extent of an I/Q imbalance error comprises estimating a transmitted symbol corresponding to said received OFDM signal”. However, the disclosure does not disclose the transmitted symbol used estimated in order to estimate the I/Q imbalance error, therefore the claim is not enabled by the specification.

Claims 5, 11, 15, 19, recite a limitation regarding “a first portion of a spectrum”, and “a second portion of a spectrum”, however, the disclosure does not discuss what a first portion or second portion of the spectrum is, or how they are to be isolated, therefore the claims are not enabled by the specification.

Claims 6,7, are rejected as dependent upon Claim 5.

Claims 12, 13, are rejected as dependent upon Claim 11.

Claims 16, is rejected as dependent upon Claim 15.

Claims 19, 20, are rejected as dependent upon Claim 18.

9. Claims 4, 8, 14, 17 are objected to as dependent upon rejected claims, but would be allowable in view of the known prior art if rewritten in independent form.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached at (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Erin M. File

3.4.2005



STEPHEN CHIN
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